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WATKINS-JOHNSON

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# INSTRUCTION MANUAL
# FOR
# TYPE DMS-105R
# TUNABLE DEMODULATOR

WATKINS—JOHNSON COMPANY
700 Quince Orchard Road
Gaithersburg, Maryland 20878

**WARNING**

This equipment employs voltages which are dangerous and may be fatal if contacted. Extreme caution should be exercised in working with the equipment with any of the protective covers removed.

# INSTRUCTION MANUAL

# FOR

# TYPE DMS-105A

# TUNABLE DEMODULATOR

WATKINS—JOHNSON COMPANY
700 Quince Orchard Road
Gaithersburg, Maryland 20878

C/200/10/20/72/DCM
Revised 12/22/75/HWO
WJ/125/8/2/76
WJ/200/12/1/77

**WARNING**

This equipment employs voltages which are dangerous and may be fatal if contacted. Extreme caution should be exercised in working with the equipment with any of the protective covers removed.

# ADDENDA

## DMS-105A

The following changes should be incorporated into the Instruction Manual for the DMS-105A.

1. Table 1-1; Type DMS-105A Specifications

   A. Change "Size" from: 18 inches deep to 19.5 inches deep.

   B. Change "Weight" from: 31.0 lbs. to: 30.0 lbs.

2. Section II - Circuit Description

   A. Paragraph 2.2.1; Page 2-1

      1. Change the following sentence from: "------ A19 is applied to input attenuator A21" to: "------ A19 is applied to input attenuator A20".

   B. Paragraph 2.3.14.2; Page 2-7

      1. Change the following sentence from: "The high-band local oscillator is functionally identical to the low-band oscillator described above". to: "The low-band oscillator is functionally identical to the high-band oscillator described above."

   C. Paragraph 2.3.17; Page 2-8

      1. Change the following sentence from: "The board consists of a high performance monolithic operational amplifier U1, with integrated circuitry converting it to an inverting amplifier." to: "The board consists of a high performance monolithic operational amplifier U1, used as an inverting amplifier."

3. Section III - Installation and Operation

   A. Paragraph 3.1; Page 3-1

      1. Change the following sentence from: "It requires 5.25 inches of vertical space and extends 17.5 inches into the rack." to: "It requires 5.25 inches of vertical space and extends 19.5 inches into the rack."

   B. Figure 3-1; Critical Dimensions; Page 3-3

      1. Change the vertical dimension on the side view from: 17.5 to: 19.5.

4. Section IV - Maintenance

A. Paragraph 4.5.3; Power Supplies; Page 4-6

1. In step (5), change reference designation from: A14R7 to: A15R7.

B. Figure 4-4; Test Setup, Mixer Alignment; Page 4-8

1. Change the 2 MHz output frequency of the HP-606B Signal Generator to 1 MHz.

C. Paragraph 4.5.8; AM/MCW Demodulator; Page 4-9

1. In step (1) change the following sentence from: "------ in Figure 4-5 except connect the oscilloscope vertical input to the DMS-105A AM output jack J6". to: "------ in Figure 4-5 except connect the marker adder input to the DMS-105A AM output jack J6".

D. Paragraph 4.5.10; Overall Gain and AGC; Page 4-10, 4-11

1. Change step (2) i to: (2) f.

2. Change step (2) f to: (2) g.

3. Change step (2) g to: (2) h.

4. Change step (2) h to: (2) i.

5. Figure 4-7; Test Setup; Overall Gain and AGC Alignment; Page 4-11

a. Change the following at DMS-105A Block

1. (J1) to (J4).

2. XA11 pin 8 to J6.

6. In step (6) change the following sentance from: (Note: If any IF bandwidth has less than -22 dBm IF output, adjust all other bandwidths to this particular lower output level.) to: (Note: Because of gain variations in field-effect transistors the -22 dBm level may not be obtained with some bandwidths. If this occurs with any IF bandwidth, adjust all other bandwidths to this lower level.)

7. Add the following note to step (7). (Note: If this level cannot be obtained, adjustment of IF boards A3, A4 and A5 should be checked to assure proper output levels.)

8. Change the following steps as indicated below.

a. Change step (9) to: (10).

b. Change step (10) to: (11).

c. Change step (11) to: (13).

d. Change step (12) to: (14).

e. Change step (13) to: (15).

f. Change step (14) to: (16).

g. Change step (15) to: (17).

h. Change step (16) to: (18).

9. Add new step (9) as follows: Tune the Main Tuning to 494.0 kHz

10. Change step (10) from: Adjust A6R20 for -30 dBm IF output level." to: Adjust A6R20 for -30 dBm (7 mV rms) IF output level.

11. Add new step (12) as follows: Tune the Main Tuning to 504.0 kHz.

12. Change step (13) from: Adjust A6R4 for -30 dBm IF output level to: Adjust A6R4 for -30 dBm (7 mV rms) IF output level.

13. In step (15) change from: "------ 2.2 V dc to: "------ 2.4 V dc".

14. In step (17), change from: "------ 1.9 V dc to: "------ 2.0 V dc".

E. Paragraph 4.5.11; CW/SSB/FSK Demodulator; Page 4-12

1. Change the following sentence, in step (9) from: "------ 6 and 10 kHz, with an output level greater than 20 dB." to: "------ 6 and 10 kHz, with an output level greater than 2.0 volts peak-to-peak."

F. Paragraph 4.5.12; IF Translator; Page 4-13

1. Change step (6) to step (7).

2. Change step (8) from: Select the 100 kHz and record the output level. to: Select the 15 kHz Translator Output. Note the output level output on the oscilloscope. (Note: Step (8) was deleted and step (7) became step (8).)

3. Add new step (6) as follows: Select the 100 kHz Translator Output. Note the output level observed on the oscilloscope.

4. Table 4-3; Typical Transistor Element and Module Receptacle Pin Voltages; Page 4-13 and 4-14.

a. Change all 3N140 type transistors to 3N187.

b. At A9Q3 change the Gate 1 voltage from 0.0 to -1.40, and Gate 2 voltage from: ------ to: 1.62.

5. Section V - Replacement Parts List

   A. Paragraph 5.4.13; Type 79527-1 FM Demodulator (A12)

      1. Change the quantity of R6 from: 2 to: 1. (Page 5-44)

      2. Change R18* from: Same as R6 to: Resistor, Fixed, Composition: 3.3 MΩ, 5%, 1/4W; Qty. 1; Part Number RCR07G335JS; Mfr. Code: 81349; Recm. Vendor 01121. (Page 5-44)

   B. Paragraph 5.4.18; Type 79977 HF Counter Assembly (A17)

      1. Add P2 as follows: Connector, Plug; Qty. 2; Part Number 60598-5; Mfr. Code: 00779. (Page 5-53)

      2. Add P3 as follows: Same as P2. (Page 5-53)

   C. Paragraph 5.4.19.1.1; Part 15188 Local Oscillator (A18A1A1)

      1. Change C9 from: Capacitor, Ceramic, Tubular: 47 pF, 5%, 500 V; Qty. 2; Part Number 308-000C0G0-470J; Mfr. Code: 72982 to: Capacitor, Ceramic, Disc: 47 pF, 5%, 50 V (N450); Qty. 1; Part Number IT47AJ; Mfr. Code: 93958. (Page 5-67)

      2. Change C20 from: 33 pF, 5%, 500 V; Part Number 308-000C0G0-330J to: 33 pF, 5%, 500 V (N330); Part Number 301-000S2H0-330J. (Page 5-67)

      3. Change C21 from: Same as C9 (47 pF; Part Number 308-000C0G0-470J) to: Capacitor, Ceramic, Disc: 56 pF, 5%, 50 V (N330); Qty. 1; Part Number IS56AJ; Mfr. Code: 93958. (Page 5-67)

      4. Change CR2, CR3, CR5, and CR6 from: V27E; Mfr. Code: 01281 to: BB109-Yellow; Mfr. Code: 25088. (Page 5-67)

   D. Change all 3N140 transistors to: 3N187.

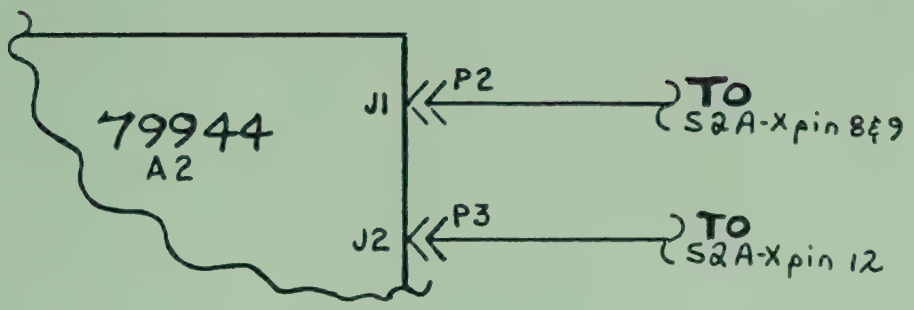
   E. Change all 2N3933 transistors to: 2N3478.

   F. Change all 2N4074 transistors to: 2N2222A.

6. Section VI - Schematic Diagrams

   A. Figure 6-14; Type 79977 HF Counter Assembly (A17) Page 6-29

      1. Add P2 and P3 as shown on the next page.




B. Figure 6-15; Type 79893 Gate Generator (A17A1) Page 6-31

1. Change R14 from: 2.4 MΩ to: 5.1 MΩ.

C. Figure 6-17; Type 71233 LO Tuning Assembly (A18) Page 6-35

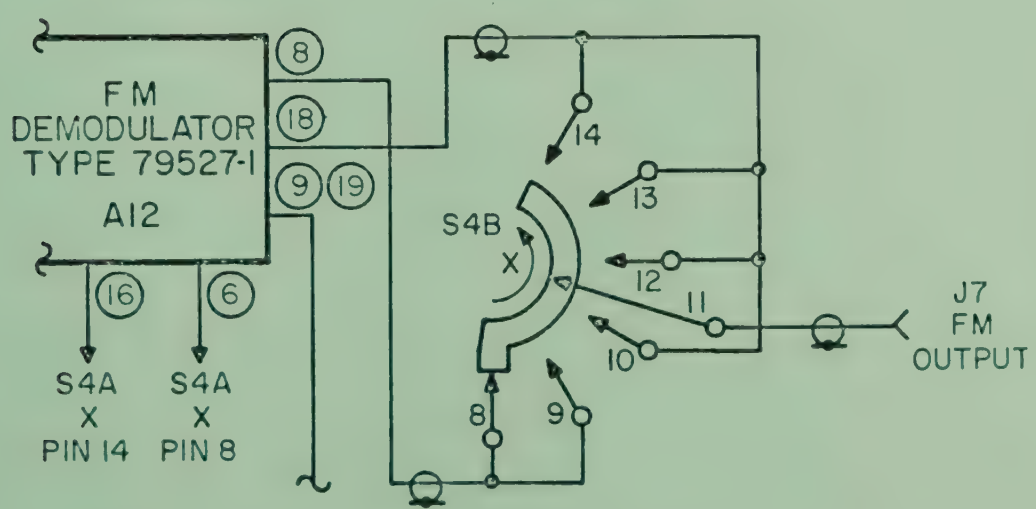
1. Add (L. B.) to C7.
2. Add (H. B.) to C6.

D. Figure 6-18; Part 15188 Local Oscillator (A18A1A1) Page 6-37

1. Change C21 from: 47 pF to: 56 pF.
2. Change CR2, CR3, CR5 and CR6 from: V27E to: BB109.

E. Figure 6-22, DMS-105A Tunable Demodulator, Page 6-45

1. At A12, Type 79527-1, add S4B-X as shown below and change the lettering at pins 6 and 16.




2. Change C3 from: 250 μF to: 200 μF.

F. Change all 3N140 Transistors to: 3N187.

G. Change all 2N3933 Transistors to: 2N3478.

H. Change all 2N4074 Transistors to: 2N2222A.

April 16, 1982
ADDENDUM

The following changes should be incorporated into the DMS-105A Tunable Demodulator Instruction Manual:

1.0 SECTION V, REPLACEMENT PARTS LIST

1.1 Paragraph 5.4.18, page 5-53, Type 79977 HF Counter Assembly

| | | REF. DESIG. | DESCRIPTION | QTY. | MFR. PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|---|---|
| 1.1.1 | From: | J1 | Connector, Receptacle | 2 | 46625 | 74868 | |
| | To: | J1 | Connector, Receptacle | 2 | 46025 | 74868 | |

1.2 Paragraph 5.4.18.1, page 5-55, Type 79893 Gate Generator

| | | REF. DESIG. | DESCRIPTION | QTY. | MFR. PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|---|---|
| 1.2.1 | From: | U1 | Integrated Circuit | 6 | 868292 | 14632 | |
| | To: | U1 | Integrated Circuit | 6 | SN74196N | 01295 | |

1.3 Paragraph 5.4.18.2, page 5-58, Type 79944 Count, Decode, and Display

| | | REF. DESIG. | DESCRIPTION | QTY. | MFR. PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|---|---|
| 1.3.1 | From: | U3 | Integrated Circuit | 1 | 868290 | 14632 | |
| | To: | U3 | Integrated Circuit | 2 | SN74LS196N | 01295 | |
| 1.3.2 | From: | U7 | Integrated Circuit | 1 | 868280 | 14632 | |
| | To: | U7 | Same as U3 | | | | |
| 1.3.3 | From: | U4 | Integrated Circuit | 8 | 868292 | 14632 | |
| | To: | U4 | Integrated Circuit | 8 | SN74196N | 01295 | |

1.4 Paragraph 5.4.19.1, page 5-65, Type 7749 Local Oscillator Tuning Assembly

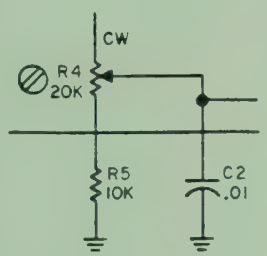
| | | REF. DESIG. | DESCRIPTION | QTY. | MFR. PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|---|---|
| 1.4.1 | From: | C6 | Capacitor, Variable Air: 6.5-62.36 pF, 500 V | 2 | C28-341-20/.012 | 23783 | |

| | | REF. DESIG. | DESCRIPTION | QTY. | MFR. PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|---|---|
| 1.4.1 | To: | C6 | Capacitor, Variable Air: 5.75-6.3 pF, 500 V | 2 | C28-241-16/.012 | 23783 | |

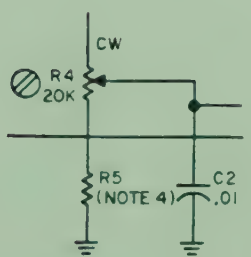
2.0 SECTION VI, SCHEMATIC DIAGRAMS

2.1 Figure 6-3, page 6-7, Types 72255, 72256, 72257 and 72258 IF Amplifier (A3 thru A6), Schematic Diagrams

2.1.1 Change schematic diagram from:




To:



2.1.2 Change note 4 from:

4. For FL1, FL2, R3, R19, and R12 Values, see chart below.

| TYPE NO. | FL1 | FL2 | R3 | R19 | R12 |
|---|---|---|---|---|---|
| 72255 | 8kHz PART NO 8197922 | 16kHz PART NO 8197923 | 68K | 68K | 470 |
| 72256 | 5kHz PART NO. 8197920 | 7kHz PART NO 8197921 | 68K | 68K | 470 |
| 72257 | 150Hz PART NO 6093695 | 1kHz PART NO. 6093694 | 68K | 68K | 470 |
| 72258 | LOWER S.B PART NO. 8197933 | UPPER S.B. PART NO. 8197932 | 68K | 150K | 330 |
| 72325 | 150Hz PART NO. 6093695 | 500Hz PART NO. 6093715 | 68K | 68K | 470 |
| 72326 | 1kHz PART NO. 6093694 | 3kHz PART NO. 6093693 | 68K | 68K | 470 |
| 72401 | 1 kHz PART NO 6093694 | 5kHz PART NO 8197920 | 68K | 68K | 470 |

To: For FL1, FL2, R3, R5, R19 and R12 values, see Chart below.

| TYPE NO. | FL1 | FL2 | R3 | R19 | R12 | R5 |
|---|---|---|---|---|---|---|
| 72255 | 8kHz PART NO 8197922 | 16kHz PART NO 8197923 | 68K | 68K | 470 | 10K |
| 72256 | 5kHz PART NO 8197920 | 7kHz PART NO. 8197921 | 68K | 68K | 470 | 10K |
| 72257 | 150Hz PART NO 6093695 | 1kHz PART NO. 6093694 | 68K | 68K | 470 | 10K |
| 72258 | LOWER S.B PART NO 8197933 | UPPER S.B. PART NO. 8197932 | 68K | 150K | 330 | — |
| 72325 | 150Hz PART NO. 6093695 | 500Hz PART NO. 6093715 | 68K | 68K | 470 | 10K |
| 72326 | 1kHz PART NO. 6093694 | 3kHz PART NO. 6093693 | 68K | 68K | 470 | 10K |
| 72401 | 1 kHz PART NO 6093694 | 5kHz PART NO 8197920 | 68K | 68K | 470 | 10K |

2.2 Figure 6-15, page 6-31, Type 79893 Gate Generator (A17A1), Schematic Diagram

2.2.1 Change schematic diagram part numbers of U1, U2, U3, U4, U5, and U10

From: 868292
To: SN74196N

2.3 Figure 6-16, page 6-33, Type 79944 Count, Decode, and Display (A17A2) Schematic Diagram

2.3.1 Change schematic diagram part numbers of U3 and U7

From: 868290
To: SN74LS196N

2.3.2 Change schematic diagram part numbers of U4, U8, U11, U15, U16, U19 and U20

From: 868292
To: SN74196N

2.4 Figure 6-17, page 6-35, Type 71233 LO Tuning Assembly (A18), Schematic Diagram

2.4.1 Change schematic diagram value of capacitor C6

From: 6-62
To: 5.75-63

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Table 1-1. Type DMS-105A Tunable Demodulator, Specifications

| | |
|---|---|
| Frequency Range | 1 kHz to 1600 kHz in two bands:<br>Band 1: 1 kHz to 600 kHz<br>Band 2: 540 kHz to 1600 kHz |
| Types of Reception | AM, FM, SSB, CW, MCW, and FSK |
| Input Impedance | 50 ohms or 1000 ohms, selectable by front-panel switch |
| Sensitivity (at 50-ohm input impedance and 1 kHz IF bandwidth) | 30 $\mu$V, minimum, for 20 dB (s plus n)/n, all modes |
| Input Attenuator | 0 dB to 50 dB; 10 dB/step |
| IF Center Frequency | 2.0 MHz |
| IF Bandwidths for FM, AM, CW, MCW, or FSK | 150 Hz, 1, 5, 7, 8, and 16 kHz |
| IF Bandwidths for SSB | 2.5, 3.5, 4, and 8 kHz upper or lower sideband |
| BFO | Disabled in FM and AM. Fixed at center of IF in upper and lower sideband. Controllable in BFO position as follows:<br>1. Zero beat (crystal-controlled)<br>2. 1-kHz offset (crystal-controlled)<br>3. Variable ±8 kHz |
| Image Rejection | 70 dB, minimum |
| IF Rejection | 60 dB, minimum |
| Digital AFC | Holds demodulator tuning within ±100 Hz of the indicated frequency in the normal AFC mode, and within ±10 Hz in the decimal shift AFC mode. |
| Input Monitor Switch | In the normal mode the unit functions as a normal demodulator; in the bypass mode the input is connected directly to the audio amplifier through the audio gain control. |
| Outputs | Nine: Front-panel phone jack (2000 ohms nominal), Rear-apron Audio (600-ohms ungrounded), 2-MHz IF Output, SM Output, Video Output, FM Detector Output, AM Detector Output, Local Oscillator Output, Translated IF Output (2V p-p into 50-ohm load; 100, 50, or 15 kHz output front-panel selected). |
| Audio Amplifier Bandwidth | 50 Hz to 16 kHz, minimum |
| Audio Output Level | 100 mW, 600Ω |
| Video Output Level | 2 volts peak-to-peak into 50-ohm load |
| External LO Input | 0 dBm, minimum |
| Size | 5.25 inches high, 19 inches wide, and 19.5 inches deep, maximum |
| Power | 115/220 Vac, 50-400 Hz, approximately 30 watts |
| Weight | 30.0 lbs., approximately |

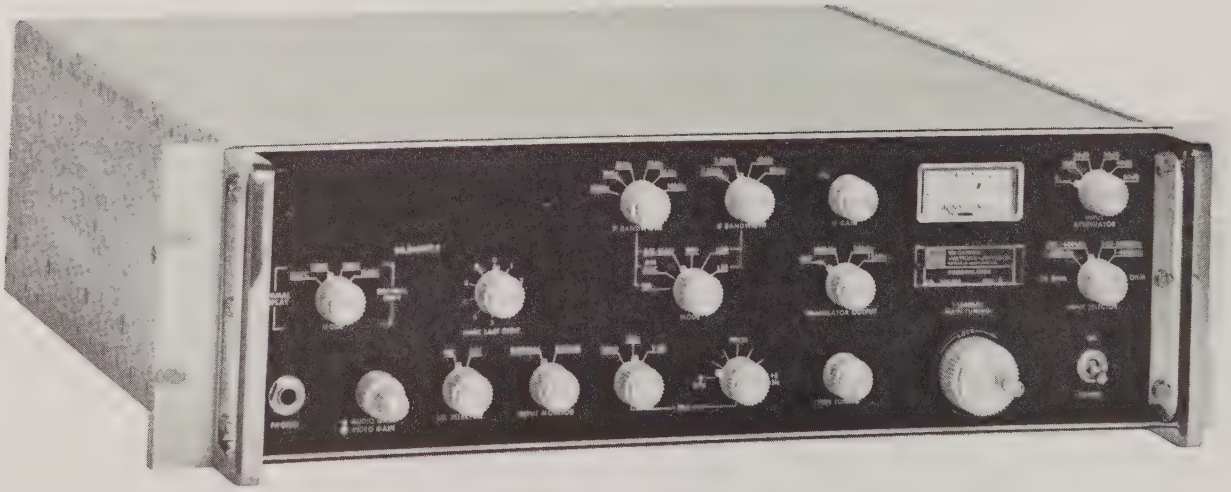


Figure 1-1. Type DMS-105A Demodulator, Front View

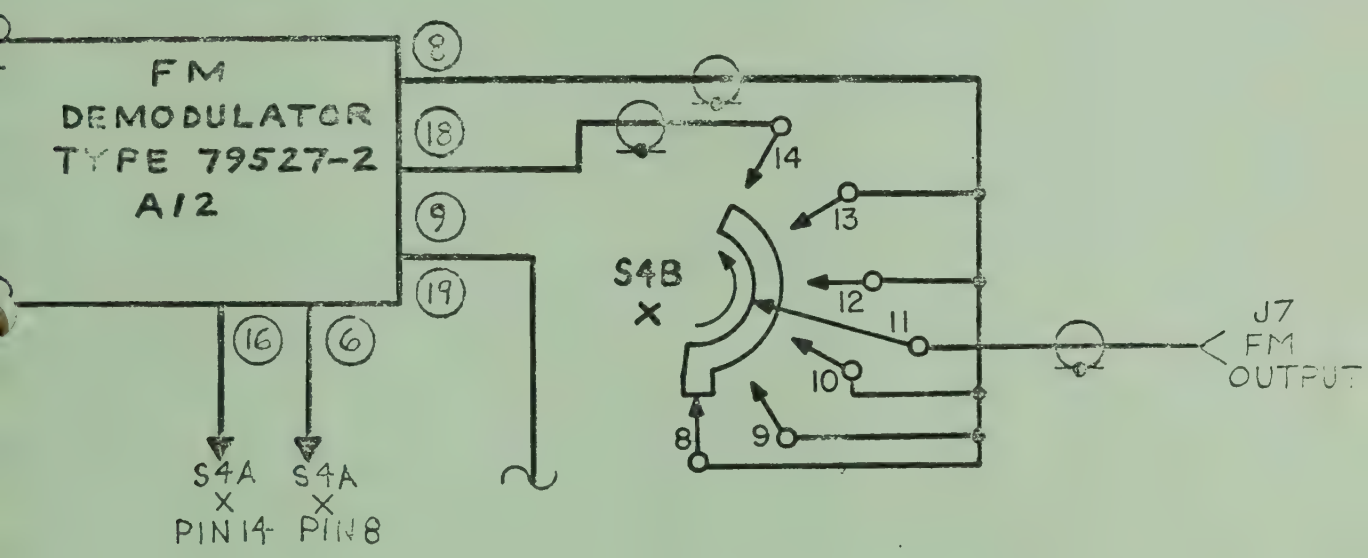
# ADDENDA

## DMS-105R

The following changes should be incorporated in the Instruction Manual for the DMS-105R Tunable Demodulator.

1. Main Chassis Schematic Diagram
(Figure 7-15, Page 7-21)

   A. At A12, Type 79527-2, add S4B-X as shown below, and change destination marking at pins 6 and 16.



April 16, 1982
ADDENDUM

The following changes should be incorporated into the DMS-105R Tunable Demodulator Instruction Manual:

1.0 SECTION VII, SUPPLEMENT FOR TYPE DMS-105R TUNABLE DEMODULATOR

1.1 Paragraph 7.5.1, page 7-6, Type DMS-105R Demodulator Main Chassis Replacement Parts List

| | | REF. DESIG. | DESCRIPTION | QTY. | MFR. PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|---|---|
| 1.1.1 | From: | FL1 | Filter, LP | 1 | JN33-1616A | 56289 | |
| | To: | FL1 | Power Line Filter Assembly | 1 | 380279-1 | 14632 | |

1.2 Figure 7-15, page 7-27, Type DMS-105R Tunable Demodulator, Schematic Diagam

1.2.1 Change schematic diagram part number of FL1

From: JN33-1616A
To: 380279-1

# SECTION VII
# SUPPLEMENT FOR TYPE DMS-105R
# TUNABLE DEMODULATOR

## 7.1 GENERAL DESCRIPTION

The Type DMS-105R Demodulator is a special RFI modified version of the DMS-105A series. The IF translator A9 and the Audio/Video amplifier A13 have been replaced with special RFI type subassemblies. The FM demodulator A12 has been slightly modified and a Transducer assembly A22 has been added. An improved power line input filter is also utilized.

7.1.1 The Type 791002 IF Translator is utilized in lieu of a Type 79524-1. The 15 kHz translated output has been reduced to 10 kHz. The 100 kHz and 50 kHz outputs remain the same. Figure 7-12 is the schematic diagram for the Type 791002 IF Translator.

7.1.2 The Type 79527-2 FM Demodulator is utilized in lieu of a Type 79527-1, changing the narrowband discriminator from 1 kHz to 8 kHz output. The wideband discriminator of 16 kHz remains the same. Figure 6-9 is the schematic diagram for both FM demodulators. The proper discriminator is selected by switch S4X according to the IF bandwidth used. Changing the narrowband discriminator to 8 kHz necessitated the rewiring of switch section S4X. Figure 7-15 illustrates the switch modification.

7.1.3 The Type 7451 Audio/Video Amplifier is utilized in lieu of the Type 7437. This specially RFI designed subassembly produces a 10 mW, 600 Ω audio output at rear-panel connector J10 and a 500 mV peak-to-peak output, into a 50 Ω load, at rear-panel connector J8. Figure 7-13 is the schematic diagram for the Type 7451 Audio/Video Amplifier.

7.1.4 The Type 791005 Transducer Assembly was added to improve the quality of the phones output. The transducer output on the front-panel must be used with an accoustically coupled earphone, which is provided with the unit. Figure 7-14 is the schematic diagram for the Type 791005 Transducer Assembly.

7.1.5 The mechanical characteristics of the DMS-105R are basically the same as the DMS-105A, with the following exceptions:

(1) The physical appearance of the phone jack on the front-panel has changed.

(2) The 15 kHz position on the Translator output switch S6, has been changed to 10 kHz.

(3) On the rear apron, barrier strip TB1 has been replaced by jack J10, utilizing a Triaxial type connector having a twin lead balanced output, with a third lead used as a common shielded ground.

(4) BNC connectors, used for the translated output J5, the video output J8 have also been replaced with Triaxial type connectors.

NOTE

Figure 1-1 shows the front-panel controls and Figure 7-6 shows the rear-panel connectors and controls.

## 7.2 CIRCUIT DESCRIPTION

Operation of the various circuits in the DMS-105A Series Demodulator is described in detail in Section II of this manual. The circuit differences between the DMS-105R and the DMS-105A are described in the following paragraphs.

7.2.1 Type 791002 IF Translator. - Figure 7-12 is the schematic diagram for the translator; its reference

designation prefix is A9. This translator is basically the same as the one utilized in the DMS-105A. Crystal Y3 has been changed from 2.015 MHz to 2.010 MHz. Transformer T1 is used on the output to produce a balanced output connected to rear-apron triaxial jack J5.

7.2.2 Type 79527-2 FM Demodulator. - Figure 6-9 is the schematic diagram for the demodulator; its reference designation prefix is A12. This demodulator is basically the same as the one utilized in the DMS-105A, except that the crystal discriminator FL1 has been changed from 1 kHz to 8 kHz.

7.2.3 Type 7451 Audio/Video Amplifier. - Figure 7-13 is the schematic diagram for this amplifier; its reference designation prefix is A13. This amplifier is basically the same as the one utilized in the DMS-105A. Operational amplifiers U1, U2, and U3 are used in lieu of transistors. Transformer T1 is coupled to the output of the video amplifier U1 to produce a balanced output connected to rear-apron triaxial jack J8. Transformer T2 is coupled to the output of the audio amplifier U2 to produce a balanced output connected to rear-apron triaxial jack J10. Audio amplifier U3 is used to produce the transducer output at pin 9.

7.2.4 Type 791005 Transducer Assembly. - Figure 7-14 is the schematic diagram for the transducer; its reference designation prefix is A22. The input of the transducer assembly is connected to pin 9 of the Audio/Video amplifier A13. The audio signal is accoustically coupled through transducer MT1 to produce a 2000 Ω nominal audio output at the transducer output (phones) located on the front-panel.

## 7.3 INSTALLATION AND OPERATION

The installation and operation of the DMS-105R is conducted as per Section III of this manual, with the following differences.

7.3.1 IF Translator Output. - A front-panel selectable predetection output of 100 kHz, 50 kHz, or 10 kHz is provided at rear-panel triaxial jack J5. The output frequency is selected by the front-panel Translated output switch.

## 7.4 MAINTENANCE

The DMS-105R is conservatively designed to give trouble free service. If problems should occur, the troubleshooting Tables 4-1 and 4-2 and the alignment procedures of Section IV of this manual apply, with the following exceptions.

7.4.1 FM Demodulator/IF Buffer. - Proceed as follows:

(1) Connect the equipment as shown in Figure 7-1.

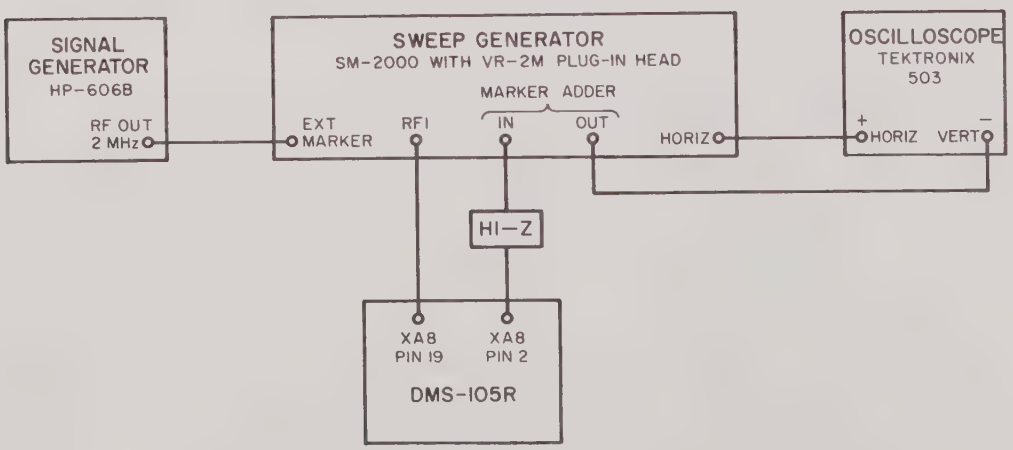



Figure 7-1. Test Setup, FM Demodulator Alignment

(2) Make the following initial control settings:

a. LO SELECTOR - EXT

b. MODE - FM

c. IF GAIN - MAX CCW

d. IF BANDWIDTH - 16 kHz

(3) Adjust the sweep generator controls for a 2-MHz center frequency. Adjust the oscilloscope controls to display the response curve. Set the HP-606B controls to provide a 2-MHz marker.

(4) Adjust A8L1 to center the response at precisely 2.000 MHz.

(5) Remove the high impedance detector and connect J7 (FM output) to marker adder input of the sweeper.

(6) Adjust A12T1 and A12L3 for a linear response and zero crossing at 2.000 MHz. (Typical response slope = 4V/16 kHz.)

(7) Set the IF BANDWIDTH switch to 8 kHz.

(8) Readjust the sweep generator controls for narrowband sweep.

(9) Adjust A12L4 for a linear response. (Typical response slope = 4V/8 kHz.)

7.4.2 Overall Gain and AGC. - Proceed as follows:

(1) Connect the equipment as shown in Figure 7-2.

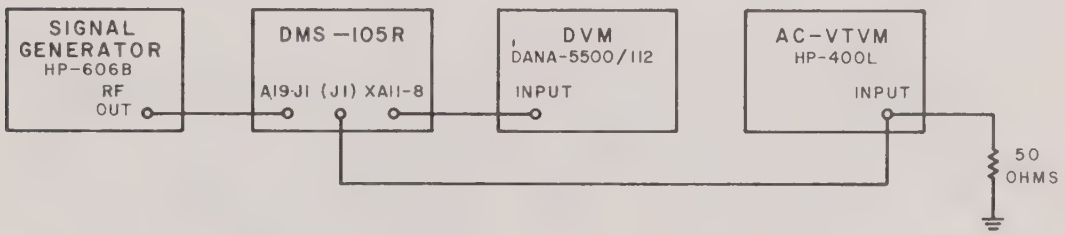



Figure 7-2. Test Setup, Overall Gain and AGC Alignment

(2) Make the following initial control settings:

a. MODE - AM/MAN

b. LO SELECTOR - INT

c. COUNTER MODE - Normal Display - Tune

d. INPUT MONITOR - Normal

e. INPUT ATTENUATOR - Zero

f. MAIN TUNING - Counter Readout 500.0 kHz

g. IF GAIN - Maximum CW

h. IF BANDWIDTH - 16 kHz

i. INPUT SELECT - 1-600 kHz, 50 Ω

(3) Adjust the signal generator for a CW signal at 500 kHz, with an output level of 30 μV.

(4) Adjust the gain pots, R4 and R20 on the IF Amplifier, A3 thru A6 for maximum gain (maximum CW) and adjust A11R6 and A7R6 for maximum gain (maximum CW).

(5) Observe the IF output in all bandwidths.

(6) If all levels are above -22 dBm (18 mV rms), adjust the gain pots on the IF amplifiers A3 thru A5 for -22 dBm (18 mV rms). (Note: If any IF bandwidth has less than -22 dBm IF output, adjust all other bandwidths to this particular lower output level.)

(7) Adjust A7R6 for -25 dBm (12 mV rms) IF output level.

(8) Change MODE to USB and set IF bandwidth to 8 kHz.

(9) Adjust A6R20 for -30 dBm IF output level.

(10) Change MODE to LSB and set IF bandwidth to 8 kHz.

(11) Adjust A6R4 for -30 dBm IF output level.

(12) Change MODE to AM/MAN and set IF bandwidth to 16 kHz.

(13) Adjust A11R6 until signal strength meter indicates "set", (approximately 2.2 Vdc on the DVM).

(14) Change MODE to AM/AGC.

(15) Adjust A11R33 until signal strength meter indicates "6", (approximately 1.9 Vdc on the DVM).

(16) Increase signal level by 30 dB; set meter should stay below "10".

7.4.3 CW/SSB/FSK Demodulator. - Proceed as follows:

(1) Connect the equipment as shown in Figure 7-3.

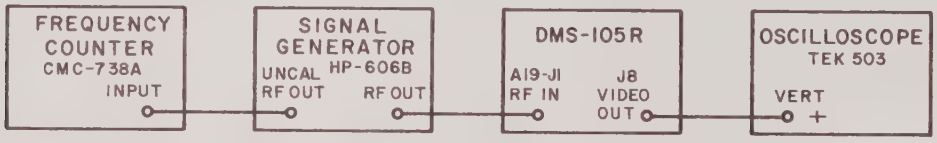



Figure 7-3. Test Setup, CW/SSB/FSK Demodulator Alignment

(2) Make the following initial control settings:

a. MODE - BFO

b. BFO - Zero

c. IF GAIN - Maximum

d. COUNTER MODE - Decimal Shift, Frequency set to 500.00 kHz

e. VIDEO GAIN - Maximum

(3) Adjust the frequency of the signal generator for precisely 500.00 kHz with an output level of 30 $\mu$V.

(4) Adjust A10C22 for a zero beat.

(5) Switch the BFO to the 1 kHz position. Insure that the output frequency is approximately 1 kHz and the video output level is approximately 500 mV P-P.

(6) Set the BFO to VAR.

(7) Adjust the pitch to zero.

(8) Adjust A10C37 for a zero beat.

(9) Set the pitch to +8 kHz mark and insure that the output frequency is between 6 and 10 kHz, with an output level greater than 20 dB.

(10) Set the pitch to -8 kHz mark and insure that the output frequency is between 6 and 10 kHz.

7.4.4 IF Translator. - Proceed as follows:

(1) Connect the equipment as shown in Figure 7-4.

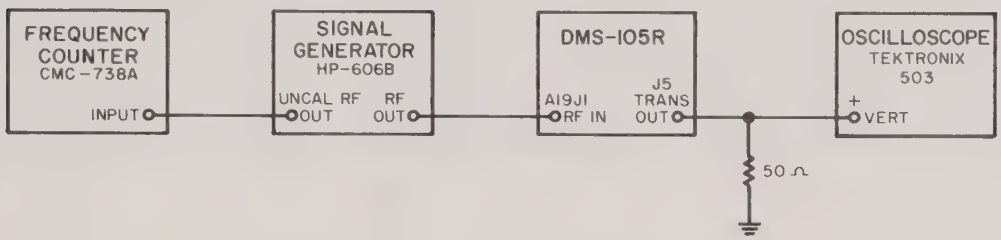



Figure 7-4. Test Setup, IF Translator Alignment

(2) Make the following control settings:

a. MODE - AM/MAN

b. IF GAIN - MAX CW

c. LO SELECTOR - INT

d. TRANSLATOR OUTPUT - 100 kHz

e. BAND - 1-600 kHz (50 Ω)

f. TUNED FREQUENCY - 500 kHz

(3) Adjust the signal generator controls for a 500 kHz CW output at 30 μV.

(4) Set A9R4 to its maximum CW position.

(5) Adjust A9L1 for a maximum indication on the oscilloscope. Note the output.

(6) Select the 50 kHz TRANSLATOR OUTPUT. Note the output level observed on the oscilloscope.

(7) Select the 10 kHz TRANSLATOR OUTPUT. Note the output level output on the oscilloscope.

(8) Select the 100 kHz and record the output level.

(9) Adjust A9R4 to obtain 500 mV P-P output level from the lowest signal level translated output recorded in steps (6), (7), and (8).

## 7.5 REPLACEMENT PARTS LIST AND SCHEMATIC DIAGRAMS

The following parts list and schematic diagrams is a supplement for the DMS-105R Demodulator and is to be used in conjunction with Section V and Section VI of this manual.

7.5.1 Type DMS-105R Demodulator, Main Chassis

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| A1 | LO ISOLATION AMPLIFIER | 1 | 79521 | 14632 | |
| A2 | MIXER | 1 | 79522 | 14632 | |
| A3 | IF AMPLIFIER | 1 | 72255 | 14632 | |
| A4 | IF AMPLIFIER | 1 | 72256 | 14632 | |
| A5 | IF AMPLIFIER | 1 | 72257 | 14632 | |
| A6 | UPPER & LOWER SIDE BAND IF AMPLIFIER | 1 | 72258 | 14632 | |
| A7 | AM/FM/MCW IF AMPLIFIER | 1 | 72259 | 14632 | |
| A8 | IF BUFFER | 1 | 79523 | 14632 | |
| A9 | IF TRANSLATOR | 1 | 791002 | 14632 | |
| A10 | CW/SSB/FSK DEMODULATOR | 1 | 79525 | 14632 | |
| A11 | AM/MCW DEMODULATOR/AGC/MGC | 1 | 79526 | 14632 | |
| A12 | FM DEMODULATOR | 1 | 79527-2 | 14632 | |
| A13 | AUDIO/VIDEO AMPLIFIER | 1 | 7451 | 14632 | |
| A14 | -18V REGULATED POWER SUPPLY BOARD | 1 | 76160 | 14632 | |
| A15 | +18V REGULATED POWER SUPPLY BOARD | 1 | 76162 | 14632 | |
| A16 | +5 & -5V POWER SUPPLY | 1 | 76211 | 14632 | |
| A17 | HF COUNTER ASSEMBLY | 1 | 79977 | 14632 | |
| A18 | LO ASSEMBLY | 1 | 71233 | 14632 | |
| A19 | INPUT FILTER ASSEMBLY | 1 | 79531 | 14632 | |
| A20 | INPUT ATTENUATOR | 1 | 79382 | 14632 | |
| A21 | DAFC MODE INVERTER | 1 | 16070 | 14632 | |
| A22 | TRANSDUCER ASSEMBLY | 1 | 791005 | 14632 | |
| C1 | CAPACITOR, MICA, DIPPED: 3900 pF, 2%, 500V | 1 | CM06FD392G03 | 81349 | 72136 |
| C2 | CAPACITOR, ELECTROLYTIC, ALUMINUM: 2500 μF, -10+150%, 15V | 1 | 43F3003CA4 | 06001 | |
| C3 | CAPACITOR, ELECTROLYTIC, ALUMINUM: 200 μF, -10+75%, 50V | 2 | 39D207G050FJ4 | 56289 | |
| C4 | Same as C3 | | | | |
| F1 | FUSE, 3AG, SLOW BLOW: 1/4A | 1 | MDL1/4 | 71400 | |
| F2 | FUSE, 3AG, SLOW BLOW: 1/8A | 1 | MDL1/8 | 71400 | |
| FL1 | FILTER, LOW PASS | 1 | JN33-1616A | 56289 | |
| J1 | CONNECTOR, RECEPTACLE, BNC SERIES | 1 | 2475 | 74868 | |
| J2 | CONNECTOR, JACK, BNC SERIES | 5 | 17825-1002 | 74868 | |
| J3 | Same as J2 | | | | |
| J4 | Same as J2 | | | | |
| J5 | CONNECTOR, RECEPTACLE, TRIAXIAL SERIES | 3 | BJ-77 | 14949 | |

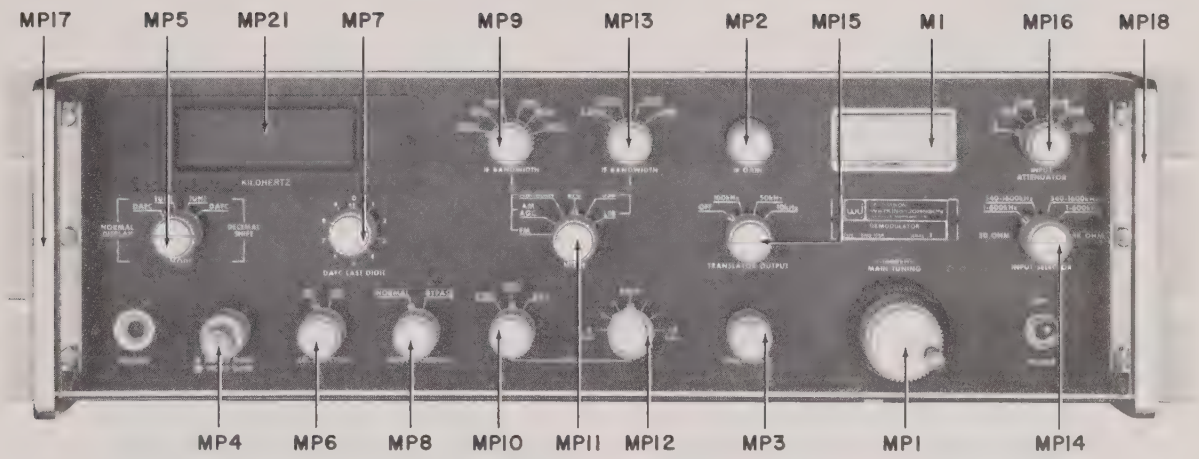



Figure 7-5. Type DMS-105R Demodulator, Front View

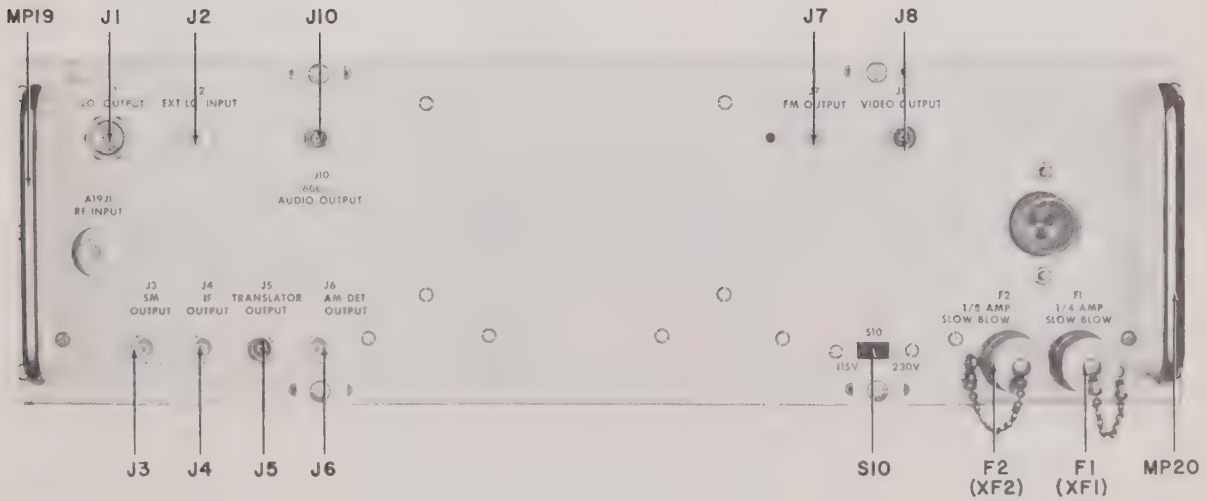



Figure 7-6. Type DMS-105R Demodulator, Rear View

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| J6 | Same as J2 | | | | |
| J7 | Same as J2 | | | | |
| J8 | Same as J5 | | | | |
| J9 | CONNECTOR, RECEPTACLE, MULTIPIN | 1 | M4SLRN | 81312 | |
| J10 | Same as J5 | | | | |
| L1 | COIL, FIXED | 1 | 3635-38 | 71279 | |
| M1 | METER, SIGNAL LEVEL | 1 | 15691-1 | 14632 | |
| MP1 | CRANK ASSEMBLY | 1 | 11755-4 | 14632 | |
| MP2 | KNOB | 2 | PS70D2 (GREY) | 21604 | |
| MP3 | Same as MP2 | | | | |
| MP4 | KNOB | 1 | PS50D3/70C5 (GREY) | 21604 | |
| MP5 | KNOB | 12 | PS70PL2 (GREY) | 21604 | |
| MP6 | Same as MP5 | | | | |
| MP7 | Same as MP5 | | | | |
| MP8 | Same as MP5 | | | | |
| MP9 | Same as MP5 | | | | |
| MP10 | Same as MP5 | | | | |
| MP11 | Same as MP5 | | | | |
| MP12 | Same as MP5 | | | | |
| MP13 | Same as MP5 | | | | |
| MP14 | Same as MP5 | | | | |
| MP15 | Same as MP5 | | | | |
| MP16 | Same as MP5 | | | | |
| MP17 | HANDLE | 2 | 32306-1 | 14632 | |
| MP18 | Same as MP17 | | | | |
| MP19 | HANDLE | 2 | 415-1280-03-02-00 | 71279 | |
| MP20 | Same as MP19 | | | | |
| MP21 | FILTER GLASS | 1 | 12584-17 | 14632 | |
| MP22 | EXTENDER CARD | 1 | 79554 | 14632 | |
| MP23 | COVER, TOP AND BOTTOM | 2 | 32574-3 | 14632 | |
| MP24 | Same as MP23 | | | | |
| P1 | CONNECTOR, PLUG, MB SERIES Part of W1 | 4 | 44950 | 74868 | |
| P2 | Same as P1 Part of W1 | | | | |
| P3 | Same as P1 | | | | |
| P4 | Same as P1 | | | | |
| P5 | CONNECTOR, PLUG, MB SERIES | 3 | 45775 | 74868 | |

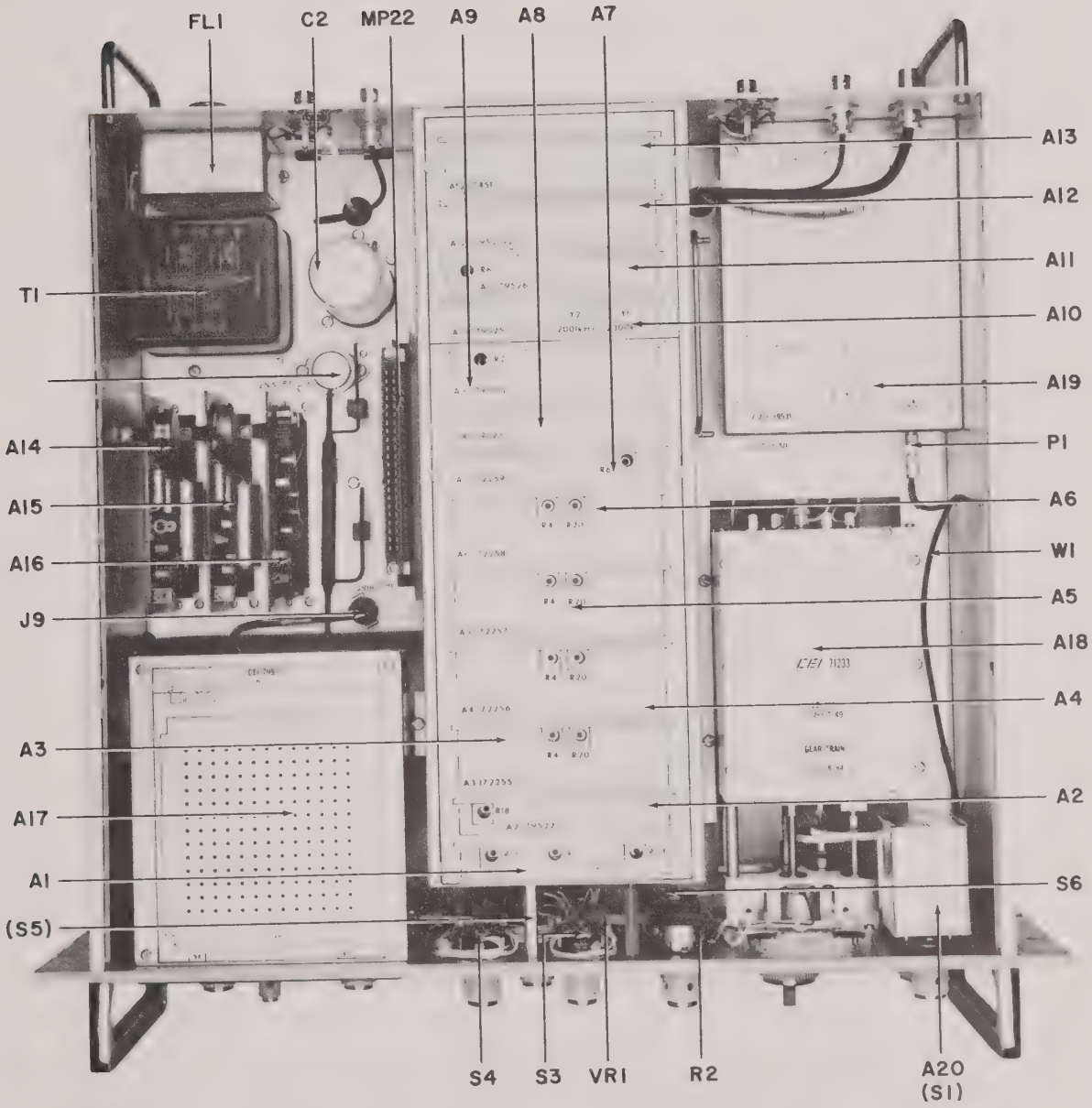



Figure 7-7. Type DMS-105R Demodulator, Top View

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| P6 | Same as P5 | | | | |
| P7 | Same as P5 | | | | |
| P8 | CORD, POWER Part of W2 | 1 | 3598-181-007 | 71700 | |
| P9 | CONNECTOR, RECEPTACLE, MULTIPIN Part of W2 | 1 | MS3106A14S7S | 96906 | 74868 |
| Q1 | TRANSISTOR | 1 | 2N3055 | 80131 | 04713 |
| R1 | RESISTOR, VARIABLE, COMPOSITION: 50 kΩ, 10%, 2W | 2 | RV4NAYSD503A | 81349 | 01121 |
| R2 | RESISTOR, VARIABLE, COMPOSITION: 25 kΩ, 10%, 2W | 1 | RV4NAYSD253A | 81349 | 01121 |
| R3 | Same as R1 | | | | |
| R4 | RESISTOR, VARIABLE, COMPOSITION: 25 kΩ/25 kΩ, 10%, 1/2W | 1 | 70-08913-2 | 37942 | |
| R5 | RESISTOR, FIXED, COMPOSITION: 10 kΩ, 5%, 1/4W | 3 | RCR07G103JS | 81349 | 01121 |
| R6 | RESISTOR, FIXED, COMPOSITION: 1 kΩ, 5%, 1/4W | 1 | RCR07G102JS | 81349 | 01121 |
| R7 | Same as R5 | | | | |
| R8 | Same as R5 | | | | |
| R9 | RESISTOR, FIXED, COMPOSITION: 270 Ω, 5%, 1/4W | 1 | RCR07G271JS | 81349 | 01121 |
| R10 | RESISTOR, FIXED, COMPOSITION: 51 Ω, 5%, 1/4W | 1 | RCR07G510JS | 81349 | 01121 |
| S1 | SWITCH, ROTARY | 2 | 1128-03 | 14632 | |
| S2 | SWITCH, ROTARY | 4 | 1128-43 | 14632 | |
| S3 | Same as S2 | | | | |
| S4 | Same as S1 | | | | |
| S5 | SWITCH, ROTARY | 1 | 1128-02 | 14632 | |
| S6 | Same as S2 | | | | |
| S7 | Same as S2 | | | | |
| S8 | SWITCH, ROTARY | 1 | 1128-42 | 14632 | |
| S9 | SWITCH, TOGGLE | 1 | 8280K16 | 27193 | |
| S10 | SWITCH, SLIDE: DPDT | 1 | 11A-1211 | 82389 | |
| T1 | TRANSFORMER | 1 | 16703 | 14632 | |
| VR1 | DIODE | 1 | 1N756A | 80131 | 04713 |
| W1 | CABLE ASSEMBLY | 1 | 30020-1185 | 14632 | |
| W2 | CABLE ASSEMBLY | 1 | 23001 | 14632 | |
| XA1 | CONNECTOR, PRINTED CIRCUIT CARD | 16 | 250-22-30-170 | 71785 | |
| XA2 | Same as XA1 | | | | |
| XA3 | Same as XA1 | | | | |
| XA4 | Same as XA1 | | | | |
| XA5 | Same as XA1 | | | | |

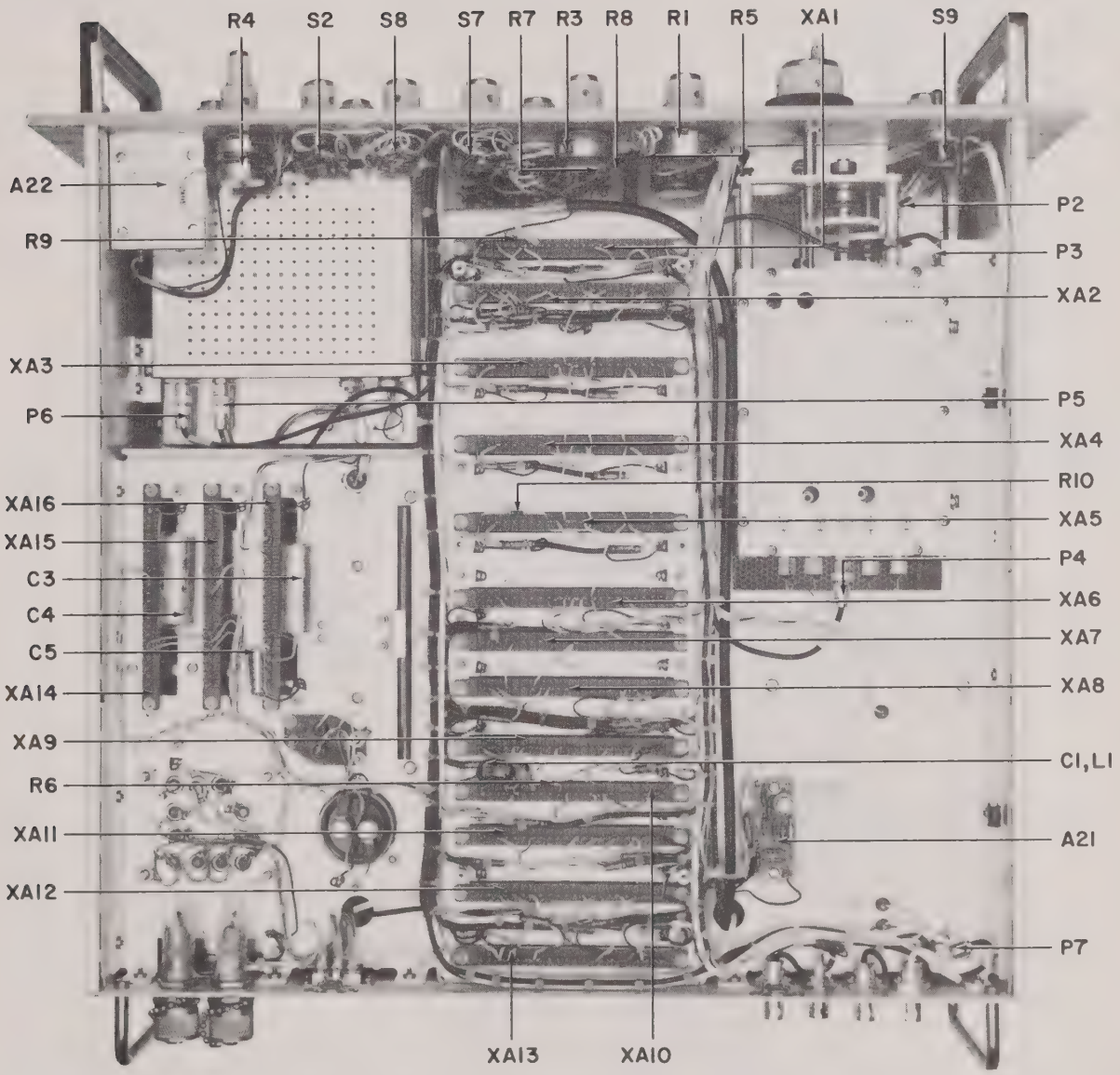



Figure 7-8. Type DMS-105R Demodulator, Bottom View

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| XA6 | Same as XA1 | | | | |
| XA7 | Same as XA1 | | | | |
| XA8 | Same as XA1 | | | | |
| XA9 | Same as XA1 | | | | |
| XA10 | Same as XA1 | | | | |
| XA11 | Same as XA1 | | | | |
| XA12 | Same as XA1 | | | | |
| XA13 | Same as XA1 | | | | |
| XA14 | Same as XA1 | | | | |
| XA15 | Same as XA1 | | | | |
| XA16 | Same as XA1 | | | | |
| XF1 | FUSEHOLDER | 2 | 342004 | 75915 | |
| XF2 | Same as XF1 | | | | |
| XQ1 | SOCKET, TRANSISTOR | 1 | 8038-1G1 | 91506 | |
| | Accessory mating external connectors to be furnished: | | | | |
| -- | CONNECTOR, PLUG, TRIAXIAL SERIES | 3 | PL76 | 14949 | |
| -- | HEADSET, MONAURAL - HEAVY DUTY | 2 | 9RS500G43 | 31487 | |
| -- | CONNECTOR | 2 | 31-006 | 74868 | |

7.5.2 Type 791002 IF Translator REF DESIG PREFIX A9

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| C1 | CAPACITOR, CERAMIC, DISC: 0.1 μF, -20+80%, 25V | 9 | DFJ3 | 73899 | |
| C2 | CAPACITOR, PLASTIC, TUBULAR: 0.01 μF, 10%, 100V | 1 | 663UW103-9-1W | 84411 | |
| C3 | CAPACITOR, CERAMIC, DISC: 0.01 μF, 20%, 100V | 2 | C023B101F103M | 56289 | |
| C4 | Same as C1 | | | | |
| C5 | CAPACITOR, MICA, DIPPED: 270 pF, 5%, 500V | 1 | CM05FD271J03 | 81349 | 72136 |
| C6 | Same as C3 | | | | |
| C7 | Same as C1 | | | | |
| C8 | CAPACITOR, ELECTROLYTIC, TANTALUM: 3.3 μF, 10%, 15V | 2 | CS13BD335K | 81349 | 56289 |
| C9 | CAPACITOR, ELECTROLYTIC, TANTALUM: 22 μF, 10%, 35V | 2 | CS13BF226K | 81349 | 56289 |
| C10 | CAPACITOR, ELECTROLYTIC, TANTALUM: 4.7 μF, 10%, 35V | 2 | CS13BF475K | 81349 | 56289 |
| C11 | CAPACITOR, MICA, DIPPED: 1200 pF, 5%, 500V | 2 | CM06FD122J03 | 81349 | 72136 |
| C12 | CAPACITOR, MICA, DIPPED: 2000 pF, 5%, 500V | 1 | CM06FD202J03 | 81349 | 72136 |
| C13 | Same as C11 | | | | |
| C14 | Same as C9 | | | | |
| C15 | Same as C8 | | | | |
| C16 | Same as C10 | | | | |
| C17 | CAPACITOR, MICA, DIPPED: 47 pF, 5%, 500V | 6 | CM05ED470J03 | 81349 | 72136 |
| C18 | Same as C17 | | | | |
| C19 | Same as C1 | | | | |
| C20 | Same as C1 | | | | |
| C21 | CAPACITOR, MICA, DIPPED: 27 pF, 5%, 500V | 3 | CM05ED270J03 | 81349 | 72136 |
| C22 | Same as C17 | | | | |
| C23 | Same as C17 | | | | |
| C24 | Same as C1 | | | | |
| C25 | Same as C1 | | | | |
| C26 | Same as C21 | | | | |
| C27 | Same as C17 | | | | |
| C28 | Same as C17 | | | | |
| C29 | Same as C1 | | | | |
| C30 | Same as C1 | | | | |
| C31 | Same as C21 | | | | |
| L1 | COIL, VARIABLE | 1 | 7107-29 | 71279 | |
| L2 | COIL, FIXED | 2 | 2500-28 | 99800 | |

REF DESIG PREFIX A9

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| L3 | Same as L2 | | | | |
| Q1 | TRANSISTOR | 2 | 3N187 | 80131 | 02735 |
| Q2 | Same as Q1 | | | | |
| Q3 | TRANSISTOR | 1 | 2N2270 | 80131 | 02735 |
| Q4 | TRANSISTOR | 3 | 3N128 | 80131 | 02735 |
| Q5 | Same as Q4 | | | | |
| Q6 | Same as Q4 | | | | |
| R1 | RESISTOR, FIXED, COMPOSITION: 22 Ω, 5%, 1/4W | 4 | RCR07G220JS | 81349 | 01121 |
| R2 | RESISTOR, VARIABLE, FILM: 1 kΩ, 30%, 1/2W | 1 | 62PAR1K | 73138 | |
| R3 | RESISTOR, FIXED, COMPOSITION: 1 kΩ, 5%, 1/4W | 2 | RCR07G102JS | 81349 | 01121 |
| R4 | RESISTOR, FIXED, COMPOSITION: 150 kΩ, 5%, 1/4W | 1 | RCR07G154JS | 81349 | 01121 |
| R5 | RESISTOR, FIXED, COMPOSITION: 10 kΩ, 5%, 1/4W | 2 | RCR07G103JS | 81349 | 01121 |
| R6 | RESISTOR, FIXED, COMPOSITION: 47 kΩ, 5%, 1/4W | 2 | RCR07G473JS | 81349 | 01121 |
| R7 | RESISTOR, FIXED, COMPOSITION: 20 kΩ, 5%, 1/4W | 1 | RCR07G203JS | 81349 | 01121 |
| R8 | RESISTOR, FIXED, COMPOSITION: 47 Ω, 5%, 1/4W | 1 | RCR07G470JS | 81349 | 01121 |
| R9 | RESISTOR, FIXED, COMPOSITION: 330 Ω, 5%, 1/4W | 2 | RCR07G331JS | 81349 | 01121 |
| R10 | Same as R1 | | | | |
| R11 | Same as R6 | | | | |
| R12 | RESISTOR, FIXED, COMPOSITION: 2.2 kΩ, 5%, 1/4W | 7 | RCR07G222JS | 81349 | 01121 |
| R13 | RESISTOR, FIXED, COMPOSITION: 82 kΩ, 5%, 1/4W | 1 | RCR07G823JS | 81349 | 01121 |
| R14 | Same as R5 | | | | |
| R15 | Same as R9 | | | | |
| R16 | RESISTOR, FIXED, COMPOSITION: 820 Ω, 5%, 1/4W | 1 | RCR07G821JS | 81349 | 01121 |
| R17 | RESISTOR, FIXED, COMPOSITION: 150 Ω, 5%, 1/4W | 2 | RCR07G151JS | 81349 | 01121 |
| R18 | RESISTOR, FIXED, COMPOSITION: 3.9 kΩ, 5%, 1/4W | 1 | RCR07G392JS | 81349 | 01121 |
| R19 | Same as R3 | | | | |
| R20 | RESISTOR, FIXED, COMPOSITION: 560 Ω, 5%, 1/4W | 1 | RCR07G561JS | 81349 | 01121 |
| R21 | Same as R17 | | | | |
| R22 | Same as R1 | | | | |
| R23 | RESISTOR, FIXED, COMPOSITION: 1 MΩ, 5%, 1/4W | 3 | RCR07G105JS | 81349 | 01121 |
| R24 | Same as R12 | | | | |
| R25 | Same as R12 | | | | |
| R26 | Same as R23 | | | | |
| R27 | Same as R12 | | | | |
| R28 | Same as R12 | | | | |
| R29 | Same as R23 | | | | |

REF DESIG PREFIX A9

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| R30 | Same as R12 | | | | |
| R31 | Same as R12 | | | | |
| T1 | TRANSFORMER | 1 | 58-130 | 06978 | |
| Y1 | CRYSTAL/QUARTZ | 1 | CR18AU 2.100MHZ | 81349 | 74306 |
| Y2 | CRYSTAL/QUARTZ | 1 | CR18AU 2.05 MHZ | 81349 | 74306 |
| Y3 | CRYSTAL/QUARTZ | 1 | 91804-08 | 14632 | |

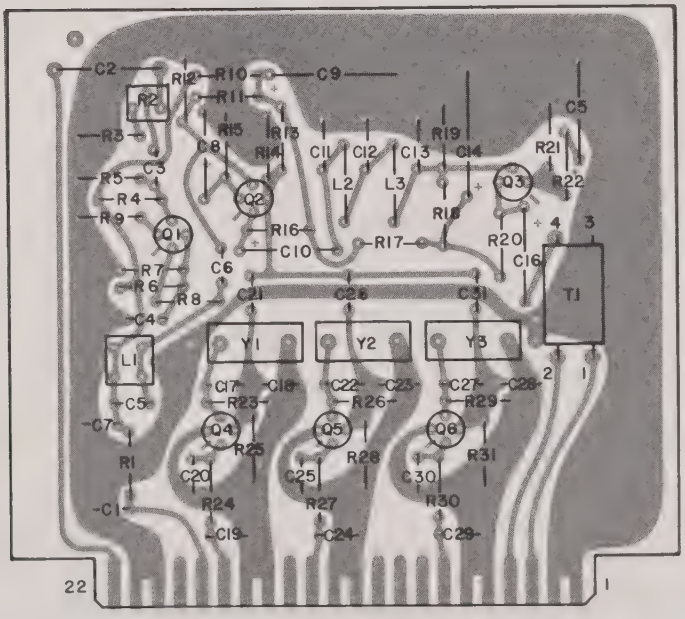



Figure 7-9. Type 791002 IF Translator (A9), Component Locations

7.5.3 Type 79527-2 FM Demodulator

REF DESIG PREFIX A12

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| AR1 | INTEGRATED CIRCUIT | 2 | U5F7719393 | 07263 | |
| AR2 | Same as AR1 | | | | |
| C1 | CAPACITOR, CERAMIC, DISC: 0.01 μF, 20%, 100V | 5 | C023B101F103M | 56289 | |
| C2 | CAPACITOR, CERAMIC, DISC: 0.02 μF, 20%, 100V | 2 | C023B101H203M | 56289 | |
| C3 | CAPACITOR, CERAMIC, DISC: 0.05 μF, 20%, 100V | 6 | 29C212A7 | 56289 | |
| C4 | Same as C1 | | | | |
| C5 | Same as C1 | | | | |
| C6 | CAPACITOR, MICA, DIPPED: 160 pF, 5%, 500V | 1 | CM05FD161J03 | 81349 | 72136 |
| C7 | CAPACITOR, MICA, DIPPED: 100 pF, 5%, 500V | 1 | CM05FD101J03 | 81349 | 72136 |
| C8 | CAPACITOR, MICA, DIPPED: 51 pF, 5%, 500V | 1 | CM05ED510J03 | 81349 | 72136 |
| C9 | CAPACITOR, MICA, DIPPED: 180 pF, 5%, 500V | 1 | CM05FD181J03 | 81349 | 72136 |
| C10 | CAPACITOR, MICA, DIPPED: 82 pF, 5%, 500V | 1 | CM05ED820J03 | 81349 | 72136 |
| C11 | CAPACITOR, MICA, DIPPED: 500 pF, 5%, 500V | 1 | DM15-501J | 72136 | |
| C12 | Same as C3 | | | | |
| C13 | Same as C3 | | | | |
| C14 | Same as C1 | | | | |
| C15 | Same as C2 | | | | |
| C16 | Same as C3 | | | | |
| C17 | Same as C1 | | | | |
| C18 | CAPACITOR, MICA, DIPPED: 820 pF, 5%, 300V | 2 | DM15-821J | 72136 | |
| C19 | Same as C18 | | | | |
| C20 | CAPACITOR, MICA, DIPPED: 1000 pF, 5%, 100V | 1 | DM15-102J | 72136 | |
| C21 | Same as C3 | | | | |
| C22 | Same as C3 | | | | |
| C23 | CAPACITOR, CERAMIC, DISC: 0.1 μF, -20+80%, 25V | 2 | DFJ3 | 73899 | |
| C24 | Same as C23 | | | | |
| CR1 | DIODE | 2 | 1N4446 | 80131 | 93332 |
| CR2 | Same as CR1 | | | | |
| FL1 | DISCRIMINATOR, CRYSTAL | 1 | 8680034 | 03040 | |
| L1 | COIL, FIXED | 1 | 2500-28 | 99800 | |
| L2 | COIL, FIXED | 1 | 201-11 | 99848 | |
| L3 | POT CORE ASSEMBLY | 1 | 30705-19 | 14632 | |
| L4 | COIL, VARIABLE | 1 | 7107-27 | 71279 | |
| L5 | COIL, FIXED | 1 | 1025-84 | 99800 | |
| Q1 | TRANSISTOR | 2 | 2N3251 | 80131 | |
| Q2 | TRANSISTOR | 2 | 2N2222A | 80131 | |

REF DESIG PREFIX A12

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| Q3 | Same as Q1 | | | | |
| Q4 | Same as Q2 | | | | |
| R1 | RESISTOR, FIXED, COMPOSITION: 100 Ω, 5%, 1/4W | 6 | RCR07G101JS | 81349 | 01121 |
| R2 | RESISTOR, FIXED, COMPOSITION: 300 Ω, 5%, 1/4W | 2 | RCR07G301JS | 81349 | 01121 |
| R3 | RESISTOR, FIXED, COMPOSITION: 47 Ω, 5%, 1/4W | 6 | RCR07G470JS | 81349 | 01121 |
| R4 | RESISTOR, FIXED, COMPOSITION: 100 kΩ, 5%, 1/4W | 2 | RCR07G104JS | 81349 | 01121 |
| R5 | Same as R4 | | | | |
| R6* | RESISTOR, FIXED, COMPOSITION: 12 MΩ, 5%, 1/4W | 2 | RCR07G126JS | 81349 | 01121 |
| R7 | RESISTOR, FIXED, COMPOSITION: 30 kΩ, 5%, 1/4W | 2 | RCR07G303JS | 81349 | 01121 |
| R8 | Same as R3 | | | | |
| R9 | Same as R1 | | | | |
| R10 | Same as R3 | | | | |
| R11 | RESISTOR, FIXED, COMPOSITION: 4.7 kΩ, 5%, 1/4W | 2 | RCR07G472JS | 81349 | 01121 |
| R12 | RESISTOR, FIXED, COMPOSITION: 470 Ω, 5%, 1/4W | 2 | RCR07G471JS | 81349 | 01121 |
| R13 | Same as R1 | | | | |
| R14 | Same as R1 | | | | |
| R15 | Same as R2 | | | | |
| R16 | Same as R3 | | | | |
| R17 | NOT USED | | | | |
| R18* | Same as R6 | | | | |
| R19 | Same as R1 | | | | |
| R20 | Same as R7 | | | | |
| R21 | Same as R3 | | | | |
| R22 | Same as R3 | | | | |
| R23 | Same as R11 | | | | |
| R24 | Same as R12 | | | | |
| R25 | Same as R1 | | | | |
| T1 | POT CORE ASSEMBLY | 1 | 30705-20 | 14632 | |
| * | Nominal value. Final value to be factory selected. | | | | |

7.5.4 Type 7451 Audio/Video Amplifier REF DESIG PREFIX A13

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| C1 | CAPACITOR, ELECTROLYTIC, TANTALUM: 1 μF, 10%, 35V | 6 | CS13BF105K | 81349 | 56289 |
| C2 | Same as C1 | | | | |
| C3 | CAPACITOR, ELECTROLYTIC, TANTALUM: 4.7 μF, 10%, 35V | 4 | CS13BF475K | 81349 | 56289 |
| C4 | Same as C1 | | | | |
| C5 | Same as C1 | | | | |
| C6 | Same as C3 | | | | |
| C7 | Same as C1 | | | | |
| C8 | Same as C1 | | | | |
| C9 | Same as C3 | | | | |
| C10 | Same as C3 | | | | |
| R1 | RESISTOR, FIXED, COMPOSITION: 47 kΩ, 5%, 1/4W | 3 | RCR07G473JS | 81349 | 01121 |
| R2 | Same as R1 | | | | |
| R3 | RESISTOR, FIXED, COMPOSITION: 33 kΩ, 5%, 1/4W | 1 | RCR07G333JS | 81349 | 01121 |
| R4 | RESISTOR, FIXED, COMPOSITION: 39 kΩ, 5%, 1/4W | 2 | RCR07G393JS | 81349 | 01121 |
| R5 | RESISTOR, FIXED, COMPOSITION: 150 Ω, 5%, 1/4W | 2 | RCR07G151JS | 81349 | 01121 |
| R6 | RESISTOR, FIXED, COMPOSITION: 100 kΩ, 5%, 1/4W | 4 | RCR07G104JS | 81349 | 01121 |
| R7 | Same as R6 | | | | |
| R8 | Same as R4 | | | | |
| R9 | RESISTOR, FIXED, COMPOSITION: 22 kΩ, 5%, 1/4W | 2 | RCR07G223JS | 81349 | 01121 |
| R10 | Same as R5 | | | | |
| R11 | Same as R6 | | | | |
| R12 | Same as R6 | | | | |
| R13 | Same as R9 | | | | |
| R14 | Same as R1 | | | | |
| R15 | RESISTOR, FIXED, COMPOSITION: 270 Ω, 5%, 1/4W | 1 | RCR07G271JS | 81349 | 01121 |
| R16 | RESISTOR, FIXED, COMPOSITION: 56 Ω, 5%, 1/4W | 1 | RCR07G560JS | 81349 | 01121 |
| T1 | TRANSFORMER | 1 | 13116 | 14632 | |
| T2 | TRANSFORMER, AUDIO | 1 | 124-5K | 70674 | |
| U1 | INTEGRATED CIRCUIT | 3 | U5B7741393 | 07263 | |
| U2 | Same as U1 | | | | |
| U3 | Same as U1 | | | | |
| VR1 | DIODE | 2 | 1N4737A | 80131 | 04713 |
| VR2 | Same as VR1 | | | | |
| XU1 | SOCKET, INTEGRATED CIRCUIT | 3 | 8058-1G49 | 91506 | |
| XU2 | Same as XU1 | | | | |

REF DESIG PREFIX A13

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| XU3 | Same as XU1 | | | | |

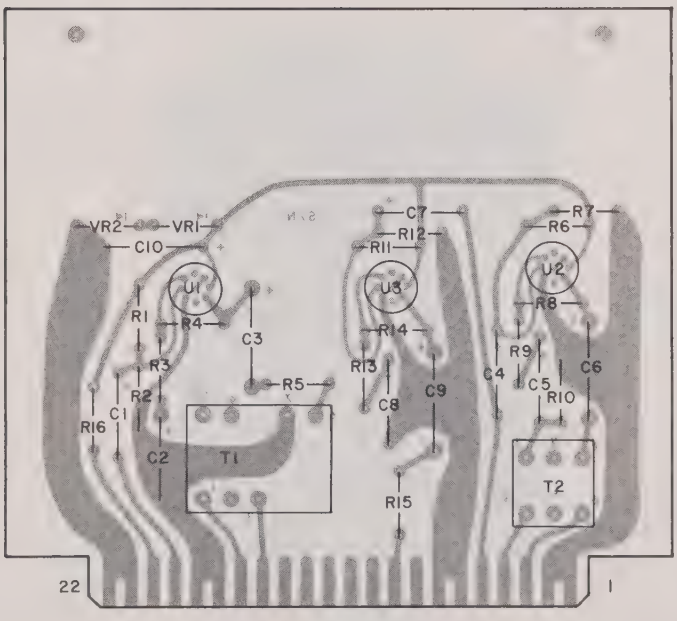



Figure 7-10. Type 7451 Audio/Video Amplifier (A13), Component Locations

7.5.5 Type 791005 Transducer Assembly REF DESIG PREFIX A22

| REF DESIG | DESCRIPTION | QTY. PER ASSY. | MANUFACTURER'S PART NO. | MFR. CODE | RECM. VENDOR |
|---|---|---|---|---|---|
| E1 | TERMINAL, FEEDTHRU, INSULATED | 1 | SFU16 | 04013 | |
| MP1 | COVER | 1 | 16812-1 | 14632 | |
| MT1 | TRANSDUCER | 1 | 9R1006G00A6MDL | 31487 | |

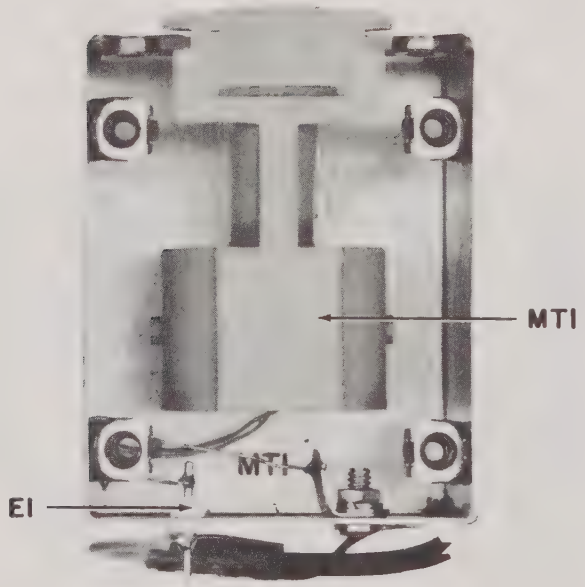
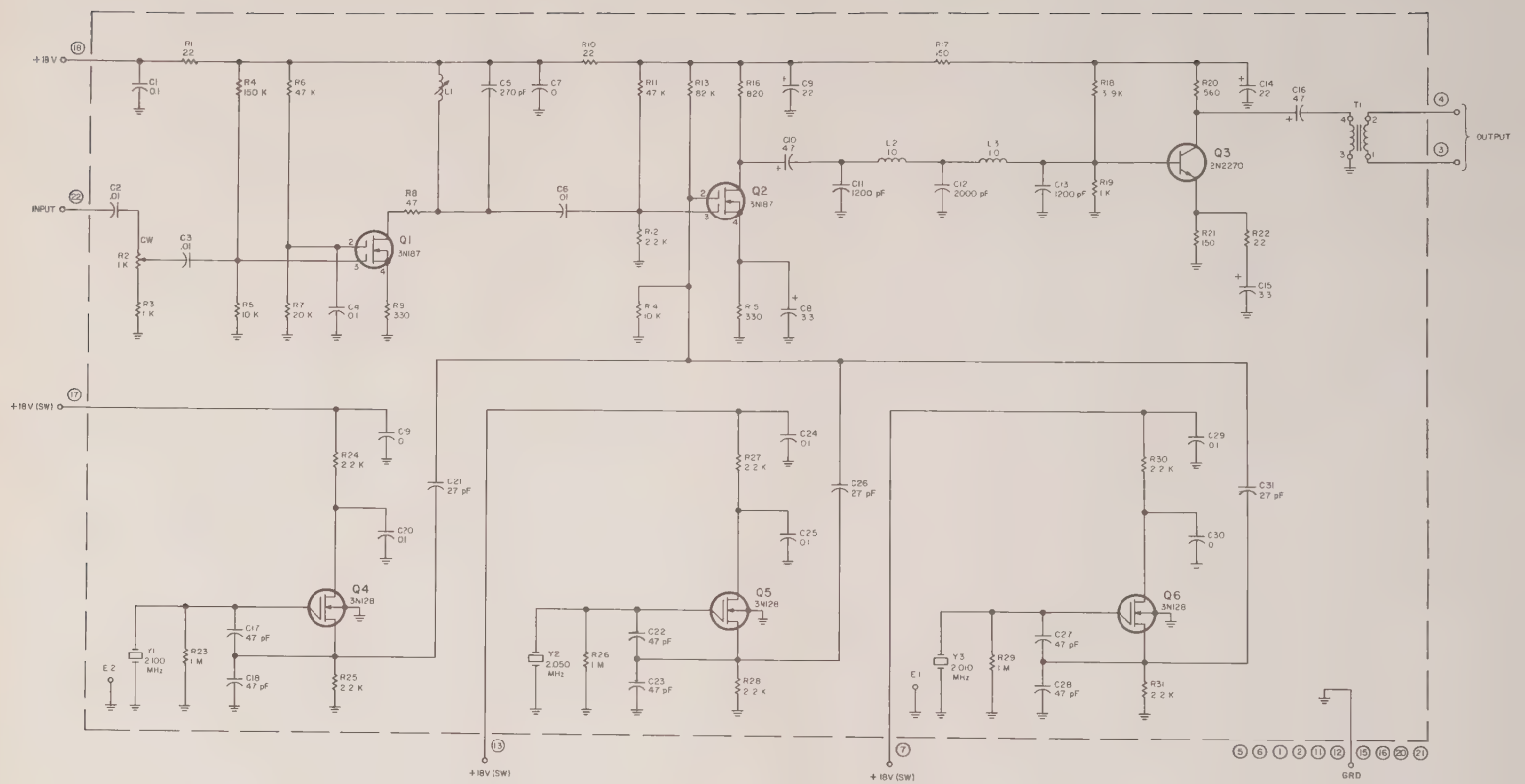



Figure 7-11. Type 791005 Transducer Assembly (A22), Component Locations




NOTES

1. UNLESS OTHERWISE SPECIFIED
   a) RESISTANCE IS IN OHMS, ±5%, 1/4 W
   b) CAPACITANCE IS IN pF
   c) INDUCTANCE IS IN mH
2. ENCIRCLED NUMBERS ARE MODULE PIN NUMBERS
3. CW ON R2 INDICATES CLOCKWISE ROTATION OF ACTUATOR

Figure 7-12. Type 791002 IF Translator (A9), Schematic Diagram

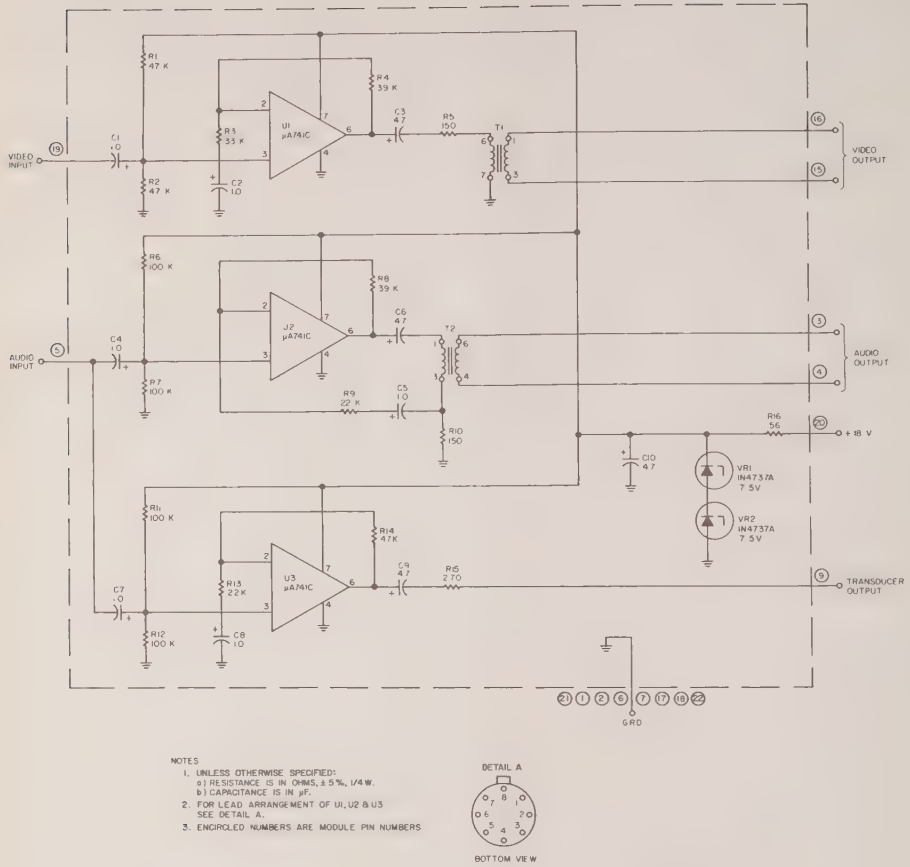



Figure 7-13. Type 7451 Audio/Video Amplifier (A13), Schematic Diagram

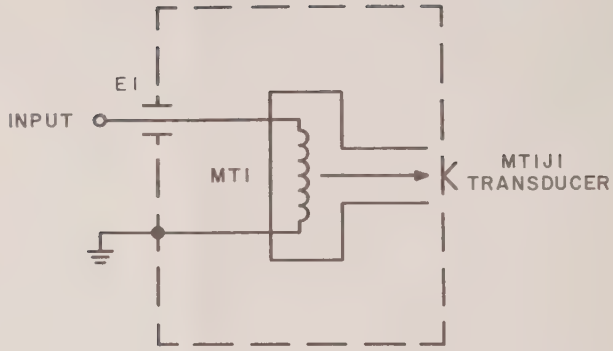



Figure 7-14. Type 791005 Transducer Assembly (A22), Schematic Diagram

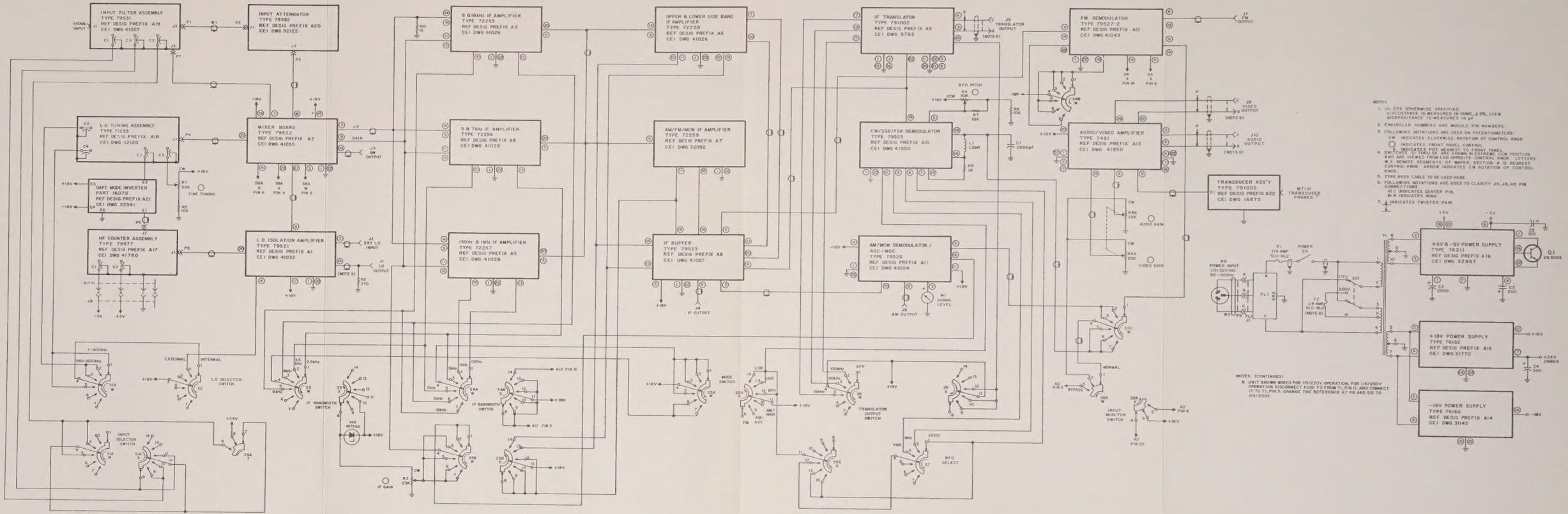

INPUT FILTER ASSEMBLY TYPE 79531 REF DESIG PREFIX A19 CEI DWG 41057
INPUT ATTENUATOR TYPE 79382 REF DESIG PREFIX A20 CEI DWG 32122
L.O. TUNING ASSEMBLY TYPE 71233 REF DESIG PREFIX A18 CEI DWG 32120
MIXER BOARD TYPE 79522 REF DESIG PREFIX A2 CEI DWG 41055
DAFC MODE INVERTER PART 16070 REF DESIG PREFIX A21 CEI DWG 22541
HF COUNTER ASSEMBLY TYPE 79977 REF DESIG PREFIX A17 CEI DWG 41780
L.O. ISOLATION AMPLIFIER TYPE 79521 REF DESIG PREFIX A1 CEI DWG 41032
8.616kHz IF AMPLIFIER TYPE 72255 REF DESIG PREFIX A3 CEI DWG 41026
5.87kHz IF AMPLIFIER TYPE 72256 REF DESIG PREFIX A4 CEI DWG 41026
150Hz-9.1kHz IF AMPLIFIER TYPE 72257 REF DESIG PREFIX A5 CEI DWG 41026
UPPER & LOWER SIDE BAND IF AMPLIFIER TYPE 72258 REF DESIG PREFIX A6 CEI DWG 41026
AM/FM/MCW IF AMPLIFIER TYPE 72259 REF DESIG PREFIX A7 CEI DWG 32092
IF BUFFER TYPE 79523 REF DESIG PREFIX A8 CEI DWG 41027
IF TRANSLATOR TYPE 79100Z REF DESIG PREFIX A9 CEI DWG 5793
CW/SSB/FSK DEMODULATOR TYPE 79525 REF DESIG PREFIX A10 CEI DWG 41050
AM/MCW DEMODULATOR / AGC/MGC TYPE 79526 REF DESIG PREFIX A11 CEI DWG 41054
FM DEMODULATOR TYPE 79527-2 REF DESIG PREFIX A12 CEI DWG 41043
AUDIO/VIDEO AMPLIFIER TYPE 7451 REF DESIG PREFIX A13 CEI DWG 41850
TRANSDUCER ASS'Y TYPE 79005 REF DESIG PREFIX A22 CEI DWG 16875
+5V & -5V POWER SUPPLY TYPE 76211 REF DESIG PREFIX A16 CEI DWG 32957
+18V POWER SUPPLY TYPE 76162 REF DESIG PREFIX A15 CEI DWG 31770
-18V POWER SUPPLY TYPE 76160 REF DESIG PREFIX A14 CEI DWG 31142
INPUT SELECTOR SWITCH
L.O. SELECTOR SWITCH
IF BANDWIDTH SWITCH
MODE SWITCH
TRANSLATOR OUTPUT SWITCH
BFO SELECT
INPUT MONITOR SWITCH
NOTES:
1. UNLESS OTHERWISE SPECIFIED: a) RESISTANCE IS MEASURED IN OHMS, ±5%, 1/4 W b) CAPACITANCE IS MEASURED IN µF
2. ENCIRCLED NUMBERS ARE MODULE PIN NUMBERS.
3. FOLLOWING NOTATIONS ARE USED ON POTENTIOMETERS: CW INDICATES CLOCKWISE ROTATION OF CONTROL KNOB ○ INDICATES FRONT PANEL CONTROL ● INDICATES POT MEAMEST TO FRONT PANEL
4. SWITCHES S1 THRU S6 ARE SHOWN IN EXTREME CCW POSITION AND ARE VIEWED FROM END OPPOSITE CONTROL KNOB. LETTERS W,X DENOTE SEGMENTS OF WAFER, SECTION A IS NEAREST CONTROL KNOB. ARROW INDICATES CW ROTATION OF CONTROL KNOB.
5. TYPE RG55 CABLE TO BE USED HERE.
6. FOLLOWING NOTATIONS ARE USED TO CLARIFY J5, J8, J10 PIN CONNECTIONS: a) C INDICATES CENTER PIN. b) R INDICATES RING.
7. INDICATES TWISTED PAIR.
NOTES: (CONTINUED)
8. UNIT SHOWN WIRED FOR 115/220V OPERATION; FOR 115/230V OPERATION DISCONNECT FUSE F2 FROM T1, PIN 11, AND CONNECT IT TO T1, PIN 5; CHANGE THE REFERENCE AT P8 AND S10 TO 115/230V.

Figure 7-15. Type DMS-105R Demodulator Main Chassis, Schematic Diagram

MP MASTER
MA34479
85647